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INTRODUCTION.

This REVIEW treats generally the meteorological conditions of the United States and Canada for October, 1888, and is based upon reports of regular and voluntary observers of both countries.

On chart i the paths of the centres of eighteen areas of low pressure are shown; the average number traced for October during the last fifteen years being 10.3.

The areas of high and low pressure are discussed under their respective headings. Descriptions of the storms that occurred over the north Atlantic Ocean are also given, and their approximate paths shown on chart i, on which also appear the distribution of icebergs and the limits of fog-belts west of the fortieth meridian.

The severest disturbances on the north Atlantic occurred off the middle Atlantic coast of the United States on the 11th, and over mid-ocean from the 25th to the 28th, when destructive gales attaining hurricane force were reported. There was a deficiency in the aggregate quantity of Arctic ice reported, and fog was less frequently observed than for the preceding month.

A noteworthy feature of the month was the remarkable storm which appeared on the south Pacific coast during the afternoon of the 17th, and moved eastward, reaching the Gulf of Mexico on the morning of the 21st. More rain fell at most of the stations along the route of this storm than had been previously noted during the whole month.

On chart ii the distribution of mean temperature for the month is shown by dotted isotherms. The month was cooler than the average October over a greater part of the country east of the one-hundredth meridian, the deficiencies in mean temperature being most marked from New England southwestward to Tennessee and on the middle Atlantic coast, where they were more than 6°. Over the western part of the country the mean temperature was generally above the normal, the greatest excesses occurring in the Sacramento Valley and over west Montana, where they exceeded 4°. At two stations in Washington Territory the maximum temperatures were the highest reported in October for a series of years.

Chart iii exhibits normal and current October temperature curves for selected stations.

The distribution of rainfall for October, 1888, is shown on chart iv, and the normal precipitation for eighteen years is exhibited on chart v.

In western New England, the Lake region, Florida, south of the thirtieth parallel, and over a greater part of the country west of the Mississippi River the rainfall was deficient, notably in the lower Missouri and Rio Grande valleys, where less than one-half the usual amount for October fell. In the Canadian Maritime Provinces, Maine, the middle Atlantic, south Atlantic, and east Gulf states, over the southern plateau and southern slope of the Rocky Mountains, and along the north Pacific coast it was in excess. Over a considerable part of California there was a total absence of rain. Noteworthy October rainfall data of a more local character are noted under the headings "Excessive Precipitation" and "Floods."

Commencing with July, 1888, the meteorological means for stations of the Signal Service have been determined from observations taken twice daily at 8 a. m. and 8 p. m. (75th meridian time). These hours of observation have been permanently adopted to supersede the former system of tri-daily observations taken at eight-hour intervals.

In the preparation of this REVIEW the following data, received to November 20, 1888, have been used: the regular semi-daily weather-charts, containing data of simultaneous observations taken at 133 Signal Service stations and 22 Canadian stations, as telegraphed to this office; 175 monthly journals and 175 monthly means from the former and 22 monthly means from the latter; 375 monthly registers from voluntary observers; 76 monthly registers from United States Army post surgeons; marine records; international simultaneous observations; marine reports through the co-operation of the Hydrographic Office, United States Navy, and the "New York Herald Weather Service;" monthly weather reports from the local weather services of Alabama, Arkansas, Illinois, Indiana, Iowa, Kansas, Kentucky, Louisiana, Michigan, Minnesota, Mississippi, Missouri, Nebraska, Nevada, New England, New Jersey, New York, North Carolina, Ohio, Pennsylvania, South Carolina, Tennessee, and Texas, and the Central Pacific Railway Company; trustworthy newspaper extracts, and special reports.

ATMOSPHERIC PRESSURE (expressed in inches and hundredths).

The distribution of mean atmospheric pressure for October, 1888, as determined from observations taken daily at 8 a. m. and 8 p. m. (75th meridian time), is shown on chart ii by isobars. On July 1, 1888, the tri-daily observations of the Signal Service were superseded by observations taken twice daily at the hours named. A protracted series of hourly observations has shown that the difference is almost inappreciable between the mean pressure obtained from two observations taken at these hours and that determined from tri-daily observations taken at eight-hour intervals.

The mean pressure for October, 1888, was highest over the south Atlantic states and western Oregon, where it rose to 30.08. The area of lowest mean pressure occupied the lower Colorado valley, where the values fell to 29.81 at Yuma, Ariz. In the lower Saint Lawrence valley and along the west coast of the Gulf of Saint Lawrence the mean readings were below 29.85, while in the Saskatchewan Valley they fell below 29.90.

As compared with the pressure chart for September, 1888, an increase is shown over the south Atlantic states south of the thirty-fifth parallel, and from thence westward to the ninety-